9 GLASS REFRACTIVE INDEX MEASUREMENT SYSTEM (GRIM 2)

A. Calibration

a. Calibration of the instrumentation is performed on an annual basis for the silicone oil and interference filter being used in casework. This calibration data is used by the GRIM2 system to determine refractive index at the given filter wavelength. The system is calibrated with the 589 nm interference filter using Locke Scientific Silicone Oil B and the Locke Scientific B Series of glass standards.

b. If headlight glass is encountered, GRIM2 is calibrated at 589 nm using Locke Scientific Silicone Oil C and the Locke Scientific C Series of glass standards.

c. If glass is encountered which has a very high refractive index that is above the range of the Locke Scientific Silicone Oil B, GRIM2 can be calibrated at 589 nm using Locke Scientific Silicone Oil A and the Locke Scientific A Series of glass standards.

d. The calibration data will be printed and retained in a binder which will be maintained with the equipment.

B. Monthly QC

a. The Mettler hot stage on the GRIM2 system should be inspected internally for residual mounting oil. In addition, the glass slide that is positioned in the hot stage under the objective opening should also be inspected. Set the hot stage temperature to a low setting and clean the hot stage and glass slide with isopropyl alcohol as needed.

b. The GRIM2 instrumentation is checked monthly by taking measurements of the B2, B5 and B11 Locke Scientific glass standards in the Locke Silicone Oil B. If the determined value for any of the glass standards is greater than ±0.0002 from the known value, service is required. This data will be printed and retained in a binder which will be maintained with the equipment.

c. QC of the instrumentation with the Locke Silicone Oils A and C is performed in the same manner as described above on an as needed rather than a monthly basis. The glass standards used for the Locke Silicone Oil A will be A2, A4 and B2. The standards used for the Locke Silicone Oil C will be C1 and C2. If the determined value for the glass standard is greater than ±0.0002 from the known value, service is required. Since the use of these oils is non-routine, the data will be printed and retained in the case file. Additionally, this data will be photocopied and retained in the QC binder for the equipment.

C. Case-by-Case QC Check

a. For each case examined with a single known glass sample, a single glass standard is analyzed using the appropriate wavelength and oil. The Locke glass standard selected for this QC check will be that which is closest to the refractive index value of the known glass. If multiple known glass samples of different refractive indices are present, then multiple glass standards may be necessary. A minimum of five (5) fragments from a prepared slide of the glass standard will be measured and this data will be included in the printed data for the case. If the determined value for the glass standard is greater than ±0.0002 from the known value, service is required.

♦End